SAF600U *ISMS Awareness*

Spring 08 User Supplement

This supplement that now introduces JLab's *ES&H Orientation course is designed to update users* who will not be on-site prior to June 2008. The full course is available at http://www.jlab.org/div_dept/train/lms/SAF100/ None of this is new; we have used ISM for years in planning and performing our experiments.

- Adds information on
  - Integrated Safety Management (ISM)
  - Work Planning
  - Risk Analysis

NEXT

Whether you are an employee of Jefferson Lab, a user here to conduct an experiment, or just a visitor, you will each be positively impacted by Integrated Safety Management or ISM.

ISM is the way we build safety and environmental protection into everything we do here at the Lab by assuring we ask ourselves the correct questions, find the correct answers, and utilize the correct tools all throughout our activity planning and execution.

ISM is a simple philosophy that asks us to plan and execute all of our activities in a logical manner and continuously improve the way we do work. There are 5 steps, or Core Functions, that guide this process:

1. Defining the scope of work:
   workers, supervisors and users identify the desired end result, the steps and tools necessary to get there, and learn from similar past efforts
2. Analyzing the hazards:
   we use the Scope of Work to decide what issues the work might pose to anyone inside or outside the lab, and the environment.
3. Developing and implementing hazard controls:
   we design ways to eliminate or reduce to the greatest extent the potential for a bad outcome
4. Performing work within controls:
   we take one final look to make sure everyone is qualified, the controls are in place, and we are ready to work. Once this occurs, we get the job done safely.
5. Providing feedback and continuous improvement:
   as a final step we review how the activity went, document any lessons learned (both good and bad), and share them with others so everyone can improve

NEXT

The Next Two Pages Provide a Work Planning Flow Diagram that Summarizes the Steps That Must Be Taken and Identifies How they "Map" onto the Five Core Functions of ISM as Outlined Above

WORK PLANNING, CONTROL AND AUTHORIZATION FLOW DIAGRAM

DRAFT

05/01/2008

Core Functions:

1. Define the Scope of Work

Task Identified and Assigned

Perform Preliminary Planning

- Review applicable SOPs or OSPs[1] for planned work or sub-tasks
- Identify potential hazards
- Identify applicable standard mitigation measures
- Review Lessons Learned from previous similar tasks
- Identify necessary training
- Review required qualifications for the work planned
- Make sure necessary resources are available
- Involve workers during planning as a resource
- Allocate sufficient time to perform task

Utilize area specific TaskList as directed by affected work group, or when an activity:

- Involves cross-divisional work
- Involves many sub-tasks and/or many people
- Affects other staff's safety or work space environment
- Affects the operational status of workplace system (power, water, interlocks, etc.)

2. Analyze the Hazards

Inspect work area to identify possible additional hazards

Is task within scope of understanding or norm?

NO → Involve SMEs and ESH&Q professionals

YES

Is training[2] adequate for the work planned?

NO → Training (or identification of alternate, trained staff) required before task can begin

YES

Complete Informal Evaluation of the Risk(s) of Planned Work:

- Assess Risk Code (See ES&H Manual Chapter 3210 for details)
- Involve SME, ESH&Q professionals as appropriate

To Risk Evaluation Decision

1- OSPs and SOPs must be approved and current to be considered valid
2- Training = Equipment Specific, Area Specific or Functional or Technical Competencies
3– As per Chapter 3210 of ES&H Manual

NEXT

Core Functions:

Standard Protecting Measures[3]

Basic PPE

- **Hard Hat**
- Safety Glasses w/ side shields (as needed)
- Safety Shoes
- Ear protection
- Face Shield
- Gloves
- Knee Pads
- Proper Work Clothes

Engineered Safeguards already in place and reviewed

2. Analyze the Hazards

From Informal Risk Evaluation

Is Risk Code ≤ 2 w/ standard protecting measures[3]?

NO

Formal THA Required

YES

3. Develop and Implement Hazard Controls

Is there an approved OSP, SOP, or TOSP for planned work?

NO

Develop appropriate Work Control Document with a Formal THA, review and approvals as per chapters 3210, 3310 & 3320 of ES&H Manual

YES

Formal Task Hazard Analysis NOT required

- Job is "Skill of the Craft" as defined by training and qualifications[2]

Read, understand and sign (where appropriate) associated Work Control Documents and attach to TaskList

4. Perform Work Within Controls

Perform pre-job briefing and work safely within controls

5. Feedback and Continuous Improvement

Provide Feedback

Review results and write Lessons Learned that would be applicable for similar jobs in the future

LEGEND

OSP—Operational Safety Procedure
SME—Subject Matter Experts
SOP—Standard Operating Procedure
SOW—Statement of Work
THA—Task Hazard Analysis
TOSP—Temporary Operational Safety Procedure

1- OSPs and SOPs must be approved and current to be considered valid
2- Training = Equipment Specific, Area Specific or Functional or Technical Competencies
3– As per Chapter 3210 of ES&H Manual

NEXT

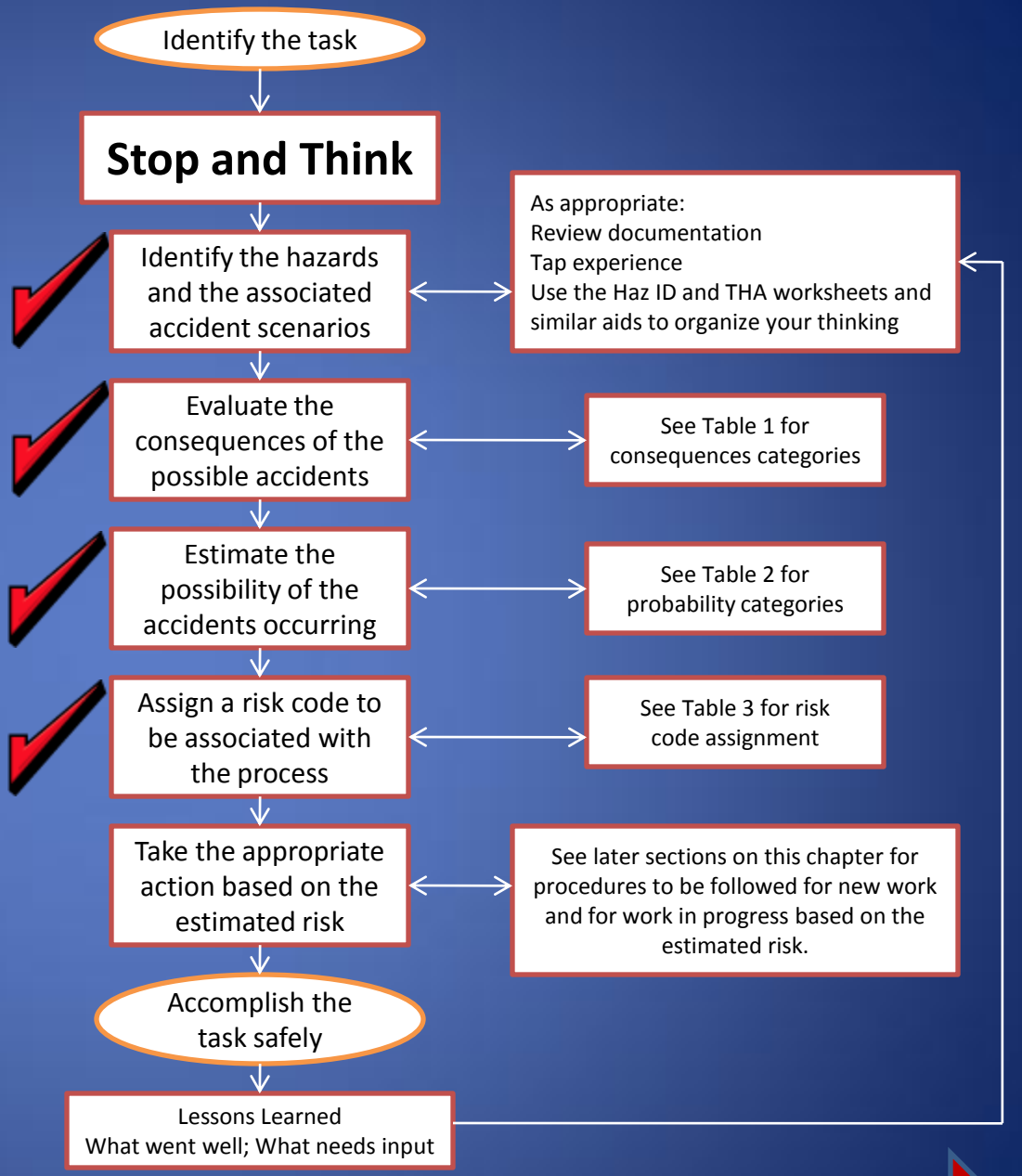
Before any work is begun, the supervisors in charge of both the work and the people who will do it conduct a job hazard analysis.

Chapter 3210 of the ES&H Manual chapter 3210 provides guidance on the process. Click ***here to open***

The steps include:
- Identify Hazards
- Evaluate the consequence of possible accidents
- Estimate the probabilities of the accidents occurring
- Assign risk

(The categories used at JLab for accident consequences and probabilities are summarized on the next two viewgraphs; the third in the series defines the Risk Categories)

The estimated risk code is the determinant of whether you can proceed with the work using available, reviewed engineered safeguards and standard protecting measures (OK if Risk code ≤2)or you must develop formal reviewed and approved work plans to guide the completion of the job (if Risk Code >2)



NEXT

Having identified potential accident scenarios, the next step is assigning consequences to each scenario using the scale defined in Chapter 3110 of the EH&S Manual (reproduced below)

Consequence levels	Severity	Personal injury	Property loss
IV	High (serious to fatal injury; major property damage)	Death or permanent disability	> $100,000
III	Medium (moderate to serious injury; serious property damage)	Hospitalization required or ≥ 5 lost workdays	> $50,000
II	Low (minor to moderate injury; minor property damage)	First aid or medical treatment required and < 5 lost workdays	> $500
I	Extremely low (little, if any, injury; insignificant damage)	First aid not required	< $500

NEXT

Next you must estimate the probability of each accident scenario and categorize it according to the scale defined in Chapter 3110 of the EH&S Manual (reproduced below)

Likelihood code	Estimated likelihood of accident	Rough time scale of likelihood*
A	Very unlikely to occur	> 500 years
B	Possible over long period of time	> 10 years ≤ 500 years
C	Likely to happen given sufficient time	> 10 days ≤ 10 years
D	Highly likely; could happen soon	≤ 10 days

NEXT

The combination of Accident Severity and Accident Probability Defines the Risk. The "Scale" used at JLab is defined in Chapter 3110 of the EH&S manual (and reproduced below)

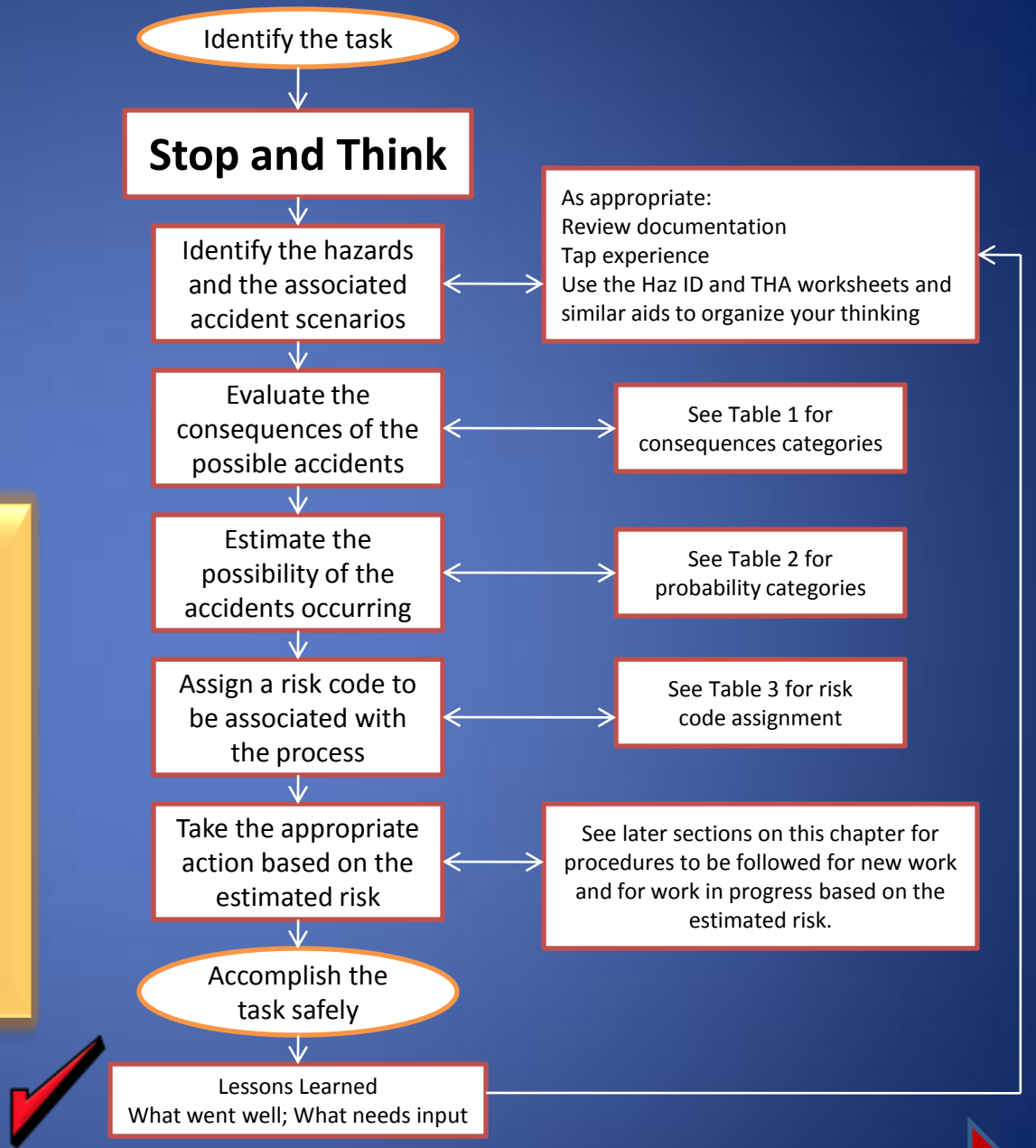
		Personal injury	Property loss or enviornmental impact				
Severity of outcome	IV	Death or permanent disability	>$100,000	1	3	4	4
	III	Hospitalization required or ≥5 lost workdays	>$10,000	1	2	3	4
	II	First aid or medical treatment required and <5 lost work days	>$500	0	1	2	3
	I	First aid not required	<$500	0	0	1	1
				>500yrs	≤500yrs >10yrs	≤10yrs >10days	≤10days
				A	B	C	D
				Likelihood of accident (Estimated likelihood per full-time active person)			

Risk Code = 0 or 1:
Work can proceed with PPE and engineered safeguards in place

Risk Code = 2:
Work can proceed as above, following review with supervisor

Risk Code = 3 or 4:
A formal, reviewed TOSP, OSP, or SOP must be used to reduce the risk to 2 or below and a new one must be developed if an applicable one is not available

NEXT

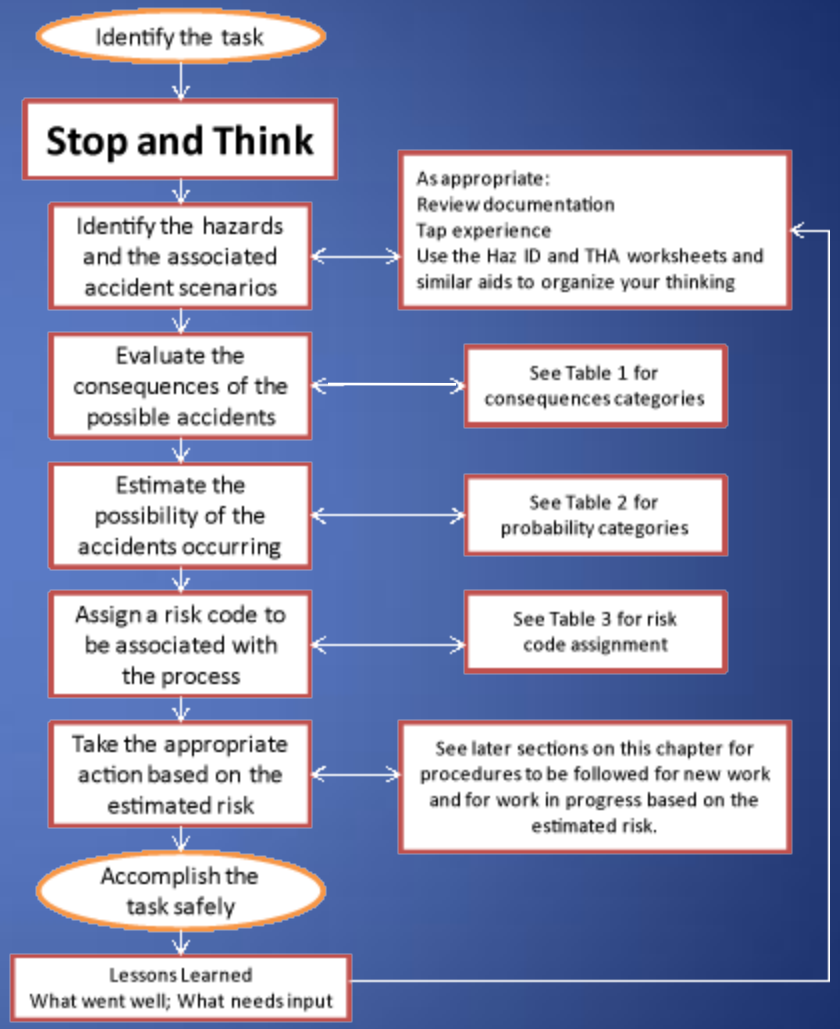


Remember that the job is not over when the work is done. The success of the controls must be evaluated and lessons learned documented so future job hazard analyses will be even more effective. That is the ISM element of continuous improvement.

NEXT

Training, such as this course, is one of the many components of ISM that help.

Employees and users will also be involved in planning their own activities, assessing the hazards associated with their work and helping design controls to eliminate or minimize the hazards to you and the
environment. This will all be done utilizing existing Lab programs, procedures, and systems.



NEXT


Training
ES&H Manual
Subcontractor Safety
Radiation Protection Program
SOPs, OSPs, & TOSPs
Worker Health and Safety Program
ISMS
Environmental Management System
FEList, ATLis, TATLs
Quality Assurance Program

CERTIFY